REMARKS

Applicant incorporates by reference the arguments made in the Remarks made in the previous Amendments. In addition, Applicant has amended the independent claims to distinguish further over the references of record. The claims are believed allowable for the additional reasons, given below.

In the present invention, oxygen is the only gas which is injected continuously into the fermentation vessel. While the present invention does disclose the injection of nitrogen, the nitrogen is not injected continuously into the vessel.

Specifically, in the embodiment of Figure 2, relating to an air-lifted fermenter, nitrogen is intermittently injected into the vessel. The nitrogen does not participate in the fermentation process per se, but instead is used only to counter the accumulation of carbon dioxide. When the concentration of carbon dioxide exceeds a predetermined level, nitrogen is injected (see the specification, page 15). When the concentration of carbon dioxide is within acceptable limits, no nitrogen is injected. Thus, the nitrogen is injected only when needed for the purpose of controlling the carbon dioxide, and not continuously (see the specification, page 16, lines 2-6).

The above feature is neither shown nor suggested by any of the references, whether taken alone or in combination.

In Cheng (A), the fermentation process clearly includes continuous delivery of both air and oxygen. See, for example, page 1, paragraphs 007 and 008. Cheng (A) provides separate oxygen spargers 22 and air spargers 26, and the oxygen bubbles and air bubbles are continuously mixed (see

paragraphs 0029 and 0030). In Cheng (A), the stream of air is used during regular operation of the fermentation process. Without the continuous stream of air, the process would not work as intended.

In Cheng (B), the title of the patent itself indicates that two oxygen-containing gases are used. A gas such as air is passed upwardly through the fermentation vessel. This step must be continuous; otherwise, the fermentation process would soon stop. Indeed, the patent describes a process in which the air flows through the system at a rate of 10-400 standard cubic feet/liter-hour (column 3, lines 51-55). Without this continuous flow of air, the process would not operate as intended.

In Cheng (C), the title of the invention itself indicates that the fermentation process is "gas driven". That is, air is passed upwardly through the fermentation vessel. This use of air is continuous, for the same reason given with respect to Cheng (B).

The European patent (EP 0341878) shows the injection of "air and/or an inert gas", through pipes 7 or 7a, in addition to the oxygen which is indirectly added to the fermentation medium. The reference clearly states, at page 3, lines 38-40, that the air or inert gas is supplied continuously.

In short, all of the cited references teach systems in which air or an inert gas is injected continuously into the vessel, separately from the injection of oxygen. Thus, none of the references teaches a system in which substantially pure oxygen is the only gas which is injected continuously into the vessel.

All of the independent claims, namely Claims 1, 25, and 26, have been amended to recite that the stream of substantially pure oxygen is the only gas that is injected continuously into the vessel.

Therefore, the independent claims all contain features which are not shown in any of the cited references. Any combination of such references

would thus not yield the invention as presently claimed.

For the reasons given above, and in previous Amendments, Applicant submits that all of the pending claims are allowable. Applicant therefore requests reconsideration by the Examiner and early favorable action.